B.C. Hydro

Stikine-Iskut Hydroelectric Development

Investigations Outline—1983

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INVESTIGATIONS OUTLINE
1983

1.0 INTRODUCTION

Only limited exploration programs for the Stikine and Iskut projects are planned during the 1983 and 1984 field seasons. Major exploration (drilling and tunnelling) is tentatively planned to resume in 1985. However, some geological mapping, core logging and rock testing programs are scheduled to be carried out in 1983 as continuation of data gathering from the major drilling and tunnelling contracts carried out in 1982.

2.0 EXPLORATION PROGRAM

The following exploration work is proposed: geological mapping, groundwater studies and construction materials investigations. Although some digging of small test pits by hand is planned, no drilling, tunnelling or trenching will be carried out.

The program is going to be an integral part and logical continuation of the ongoing geotechnical studies of the Stikine-Iskut Development.

3.0 STIKINE RIVER PROJECTS

The 1983 investigations will be mostly confined to the areas where 1982 investigations were carried out.

The areas are shown on Drawing No. 915-C15-U573 (copy attached).

Geologic Mapping

a) Complete mapping of main canyon in order to identify nature, continuity and orientation of faults and shears in vicinity of arch abutments of Stikine Canyon.

b) Carry out detailed mapping of Sustut formation on upper left abutment of Stikine Canyon.

c) Complete detailed mapping of major structural defects in Adits 1, 1A, 1A extension and 4 at Stikine Canyon.

d) Complete surface mapping of Tanzilla Project area.

e) Continue slope studies for Stikine Canyon and Tanzilla reservoirs.

f) Complete core logging at Tanzilla and Stikine Canyon.

Mapping and core logging will not cause any direct disturbance to the environment as it only involves geologists making field observations.

Construction Materials

Mapping of surficial geology in search for concrete aggregates in and around Areas 13, 14, 1 and B.

In addition to the specific areas mentioned above, some general reconnaissance work may be required in additional areas further removed from damsites.

Campsite and Access

For the 1983 activities, the Lower Camp at Stikine Canyon is proposed as a base. Access to and from the area will be by helicopter. Site staff will probably consist of geological staff of 7, catering staff of 2, helicopter crew of 2 and camp support of up to 3.

4.0 ISKUT CANYON PROJECT

The main thrust of the 1983 geotechnical exploration program is aimed at the canyon dam area and at the lava flats because of the porous unconsolidated, fluvial sediments (underburden) and interbedded recent volcanic (basalt) flows.

The 1983/84 investigations will be mostly confined to the areas where the 1982 investigations took place.

These areas are shown on Drawings No. 913-C14-C216 and -C249 (copies attached).

Geological Mapping

a) Complete mapping of Iskut Canyon.

b) Map recent lava flows in the area of Forrest Kerr Creek.

c) Map the geomorphology of the Iskut River region to identify recent structural deformations. This program will be supplemented by some hand dug test pits in the area of Forrest Kerr and canyon faults.

d) Map the left bank slide.

Groundwater Studies

a) Continue the pump tests that were commenced in 1982 (area of lava flats) in existing holes using existing water reservoir and pipeline and pump left at site for this purpose. The work will involve laying a section of pipeline (less than 1.0 km) along existing access roads to the drill holes as was planned for last year's exploration program but not carried out, pump operation and monitoring and will require that we reapply for a water licence.

b) Continue monitoring and tracer studies in the saddle dam area of lava flats.

c) Monitor water levels in numerous piezometers installed during 1982 season also in lava flats area.

Construction Materials

Mapping of surficial geology to search for impermeable core material will take place in Area 4 south of More Creek and areas located along proposed access road between Ninbunsaw River and Hector Creek.

Seismic Monitoring

A portable microseismic network will be installed to check for location of recent seismic activity at site. This will comprise three portable stations (occupying a space less than 1.0 m^3) and will not cause any direct disturbance of the environment.

Campsite and Access

For the 1983 activities, Bob Quinn Camp may be reactivated and used as a base. The Lava Flats staging area is another possible camp site. A water line is in place and the open area is large enough to accommodate a man camp if necessary.

Access to and from the exploration areas will be by helicopter.

Site staff will probably consist of a geological staff of 7, a catering staff of 2, helicopter crew of 2 and camp support of up to 3 people.

5.0 MORE CREEK PROJECT

Geological Mapping

Geological mapping of the More Creek Canyon area (which was not completed in the 1982/83 program) is the only activity planned for 1983 field season.

6.0 ENVIRONMENTAL OVERVIEW OF THE PROPOSED EXPLORATION PROGRAM

General

Since the 1983 activities will be conducted in the same general areas to those investigated in 1982, the environmental impact assessments and reclamation strategies will utilize the same base data. Generally, environmental impacts related to helicopter supported exploration camps, geophysical and other engineering investigations at the proposed project sites are localized and

site-specific reclamation plans will be provided with any new application.

All B.C. Hydro projects with expected environmental concerns are monitored by an Environmental Officer. The Officer is familiar with B.C. Hydro's environmental standards as well as the specific government requirements outlined in the operating permits. This person ensures that appropriate environmental specifications are written into the construction contracts and subsequently conducts on-site inspections to see that the contract conditions are met and reclamation plans are implemented.

Investigations at Project Sites

Investigations for the proposed dams and powerhouses will be localized at the project sites and hence will have predictable and temporary impacts on the environment. These impacts are referred to as direct impacts. Associated exploration activities, such as movement of crews and helicopter noise, will cause temporary disturbance to wildlife. These latter impacts often involve more area but are indirect and short termed.

Areas of indirect disturbance include the site-specific project areas and blocked out gross areas for materials exploration. Areas of direct disturbance include helipads, camps and access trails, where soils and/or vegetation may be disturbed.

At the completion of exploration work at a site or upon expiry of the permits, all equipment, garbage and surface structures will be removed. The site specific reclamation measures required will then be applied.

Monitoring of Permit Conditions

B.C. Hydro is continuing to monitor compliance with the terms and conditions of the various permits, consents and licences to occupy issued by Ministry of Lands, Parks and Housing for the 1982 exploration season.

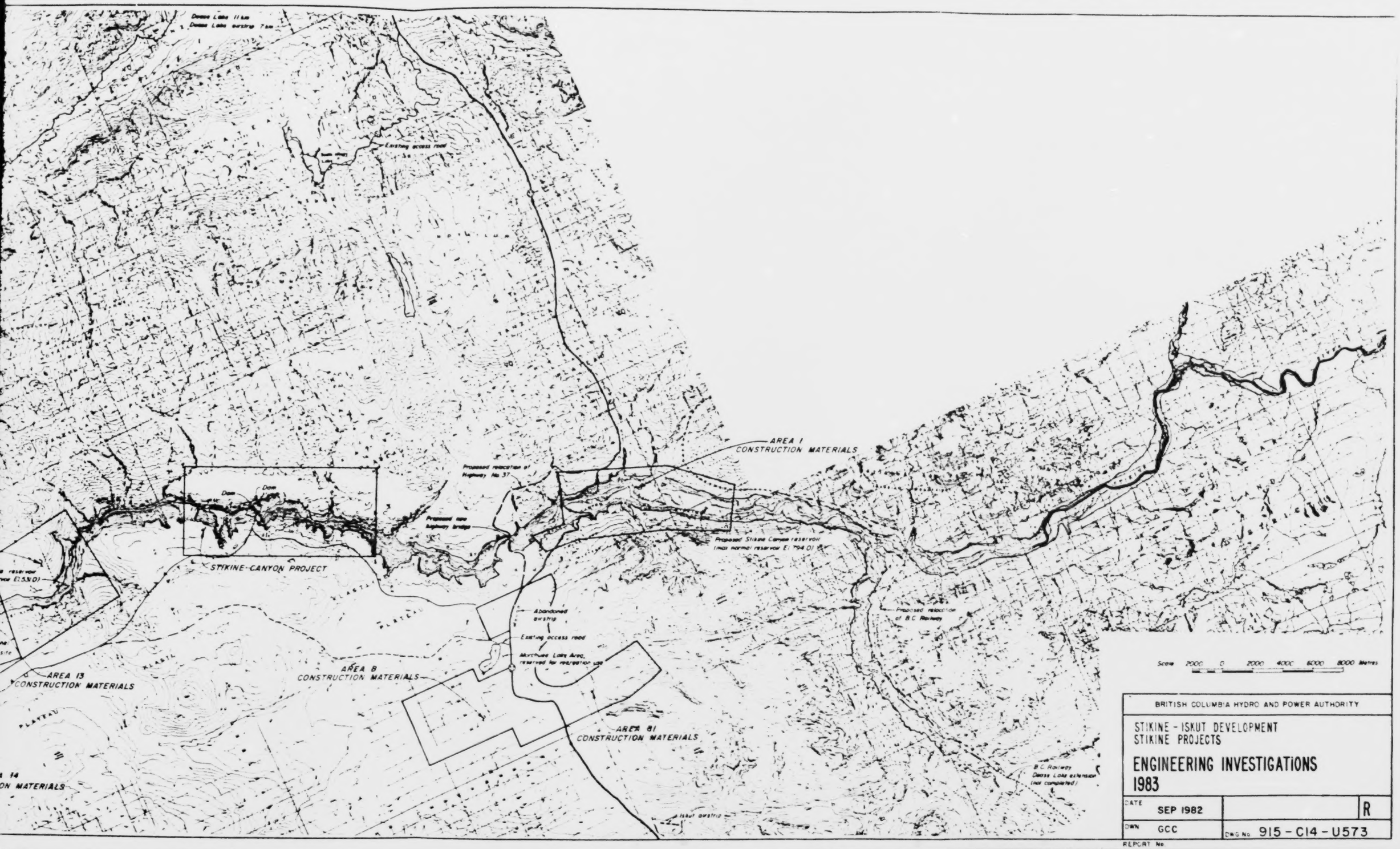
In addition, the proposed monitoring program provides for consultations between Hydro and government agencies, including joint inspections of site conditions prior to, during and following completion of the field work. The objectives of the proposed liaison arrangements are:

- to ensure that terms and conditions relating to the permits are understood by all parties at the outset;

- to allow government agencies to view exploration areas, activities and mitigation/reclamation proposals;

- and to provide a communication link by means of which any amendments or contentious issues can be dealt with at an early stage.

Dease Lake 11 km
Dease Lake airstrip 7 km
Existing access road
Telegraph Creek - Dease Lake road
PLATEAU
TANZILLA PROJECT
Proposed Tanzilla reservoir (max normal reservoir El 5310)
Dam
Power tunnel
Tanzilla complex
Powerhouse
AREA 13 CONSTRUCTION MATERIALS
AREA 14 CONSTRUCTION MATERIALS
Dam
Dam
STIKINE CANYON PROJECT
Proposed relocation of Highway No 37
Proposed new highway bridge
AREA 8 CONSTRUCTION MATERIALS
Abandoned airstrip
Existing access road
Marchuse Lake Area, reserved for recreation use
AREA 1 CONSTRUCTION MATERIALS
Proposed Shiska Canyon reservoir (max normal reservoir El 794 0)
Proposed relocation of B.C. Railway
AREA 81 CONSTRUCTION MATERIALS
B.C. Railway Dease Lake extension (not completed)
Airstrip
BRIT
STIKINE
STIKINE
ENGINE
1983
DATE
SE
DWN
REPORT No



BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

STIKINE - ISKUT DEVELOPMENT
STIKINE PROJECTS

ENGINEERING INVESTIGATIONS 1983

DATE SEP 1982		R
DWN GCC	DWG No 915 - C14 - U573	

REPORT No

Limit of Glaciers

Diversion Flow

Reservoir El. 562.5m

FORREST KERR CREEK DIVERSION DAM

Forrest Kerr Creek — More Creek Watershed Divide

COAST MOUNTAINS

ARAN RANGE

Water survey of Canada Gauge No. 08CG006

FORREST KERR CREEK

ISKUT CANYON PROJECT

Powerhouse

Flow

Power Tunnel

Main dam

Saddle dam

Reservoir El. 347m.

80

90

100

110

120

Hector Creek

Proposed Main Access Road

Construction material

Ningunsaw River

ISKUT RIVER

Construction material Area 4

MORE CREEK PROJ

More Cre

To Dease Lake (185 km)
To Stewart (193 km)
To Terrace (362 km)

To Highway No. 37 (5 km)

130° 30' W

57° 00' N

DATE

DWN.

Limit of Glaciers

Diversion Flow

Reservoir El. 562.5m.

Forrest Kerr Creek
More Creek Watershed Divide

FORREST KERR CREEK
DIVERSION DAM

Water survey of Canada
Gauge No. 08CG006

COAST MOUNTAINS

KERR CREEK

FORREST

Reservoir El. 528 m.

Water survey of Canada
Gauge No. 08CG003

ISKUT RIVER

MORE CREEK PROJECT

More Creek

More Creek Access Road

LEGEND

ACCESS ROAD

DISTANCE IN KILOMETRES ABOVE ISKUT-STIKINE CONFLUENCE

Scale 0 1 2 3 4 Kilometres

CANYON PROJECT

Powerhouse

Reservoir El. 347m.

Main dam

Saddle dam

Hector Creek

Proposed Main Access Road

Construction material

Construction material Area 4

Ningunsaw River

To Dease Lake (185 km)
To Stewart (193 km)
To Terrace (362 km)

To Highway No. 37 (5 km)

130° 30' W

57° 00' N

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

STIKINE - ISKUT DEVELOPMENT
ISKUT CANYON & MORE CREEK PROJECTS

1983 ENGINEERING INVESTIGATION

DATE		
SEP 1982		R
DWN	DWG No	913 - C14 - C216

REPORT No

LEGEND:

AREAS
SEED
APPRO

Creek used for water supply

Waterline route

Staging area

Proposed Spectry Creek Adit

Fossiliferous debris cone

Phase 1 drilling (holes 1 to 31)

Phase 2 drilling (holes 32 to 42) Adit location to be selected based upon results of phase 1 drilling

Spring used for water supply for camp

Proposed canyon area drilling shown on figures 1 & 2

Springs emerging at basalt / Andesite contact

Springs emerging from exposed underburden in this area

Scale

BRITISH COLUM

STIKINE - ISKUT
ISKUT CANYON PR

1982 EXPLO

DATE

DWN

REPORT No. 1

LEGEND:

AREAS SEEDED WITH GRASS SEED IN OCTOBER 1982, APPROXIMATELY 2500 m²

Creek used for water supply

Waterline route

Proposed Saddle Dam Axis

Staging area

Spring used for water supply for drills

Gauge WSC DBC6007

Fossil debris cones

Ancestral Forrest Kerr valley

Phase 1 drilling (holes 1 to 31)

Phase 2 drilling (holes 32 to 40). Axis location to be selected based upon results of Phase 1 drilling

Springs emerging at basalt / Andesite contact

Springs emerging from exposed overburden in this area

Springs emerging from toe of cliff

Proposed canyon area drilling shown on Figures 7 & 8

Scale 200 0 200 400 600 800 Metres

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

STIKINE - ISKUT DEVELOPMENT
ISKUT CANYON PROJECT

1982 EXPLORATION PROGRAM

DATE		R
DWN	DWG No 913-C14-C249	

REPORT No. H